DOCUMENT RESUME

ED 179 984 CS 205 334

AUTHOR Freedman, Jonathan M.: Owings, Richard A.
TITLE Some Educational Implications from Research on Story Grammar and Story Comprehension.
INSTITUTION George Peabody Coll. for Teachers, Nashville, Tenn.
SPONS AGENCY National Inst. of Child Health and Human Development (NIH), Bethesda, Md.
PUB DATE [78]
GRANT HD-10662
NOTE 13p.

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Developmental Stages: Kindergarten: Kindergarten Children: *Language Ability: *Language Development: *Language Processing: Language Research: Primary Education: *Recall (Psychological)
IDENTIFIERS *Story Grammar

ABSTRACT

Folk tales were read to 32 kindergarten children of varying levels of language ability, as measured by the language scale of the Metropolitan Readiness Test. Recall protocols were parsed into the categories described by N. L. Stein and C. G. Glenn. Low ability children were found to be less likely to recall details of "internal plan" and "attempts" (goal oriented action), but were as likely as children of higher ability to recall other types of details. Children were then asked cause-effect questions ("What happened when the lady cut off the tiger's whiskers?") and effect-cause questions ("Why did the butter melt?"). Causal associations were not bidirectional: children were more likely to recall effects given causes then causes given effects. This difference did not vary with language ability. (Author/RL)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED179984

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

Some Educational Implications from Research on Story Grammar and Story Comprehension[1]

Jonathan M. Freedman

and

Richard A. Owings

George Peabody College at Vanderbilt University

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Jonathan M. Freedman
Richard A. Owings
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Running head: Story Grammar

[1]This research was done with the aid of funds provided by a grant from the National Institute of Child Health and Development, #HD 10662, awarded to Alfred A. Baumeister.

CS205334

Some Educational Implications From Research or

Story Grammar and Story Comprehension

The purpose of this study was to examine language ability and cognitive processing variables as they affect preschoolers' understanding of stories. Some investigators have hypothesized that stories are processed cognitively via story schemas, i.e., acquired concepts about the types and ordering of events in stories (Mandler & Johnson, 1977; Poulsen, Kintsch, Kintsch & Premack, Note 1; Rumelhart, 1972; Stein & Glenn, Note 2). The story grammar model supposes a parallelism between information in the stories (story grammar) and concepts necessary to integrate that information (story schemas). Schemas aid understanding because they provide standard ways of evaluating the significance of particular events relative to the story as a whole.

Story information from different stages in the sequence are differentially recalled by older vs. younger children, with older children recalling proportionally more feeling and thinking (or Internal Responses and Plan (IR and IP) and goal-oriented action (or Attempt (AT)) Propositions (Mandler & Johnson, 1977; Stein & Glenn, Note 2). These data cannot be explained in terms of a between-groups memory difference. These data are interpreted as rather showing that younger children have not developed these concepts in their story schema. Because they lack the basis for understanding Internal Responses and Plans and Attempts, this information is not learned, and hence is absent in recall. In addition, other story grammar research indicates jumbled stories are recalled according to the sequence of story grammar categories prescribed by the model (Stein

& Glenn, Note 3), and that older children tell stories with more categories in sequence than younger children (Stein & Glenn, Note 4).

Ability differences often parallel age differences, hence we suggest low language ability children will be deficient in Internal Responses and Plan and Attempt categories as well. These data have important implications for education. The fact that young children do not understand certain story events is not critical, because research shows that they will come to do so in time. In contrast, ability differences are critical. Children who miss certain classes of information will lag further and further behind their peers as they grow older, because their understanding for stories will be less, and consequently their motivation to listen to stories will be decreased.

One aspect of story grammar is that story events are linked in a temporal-causal sequence (Poulsen, et. al., Note 1). Recall of causal information in the story was assessed via two types of questions: (a) Given cause (GC), what was the effect (e.g. What did the lady make the tiger do?) and (b) Given effect (GE), What was the cause (e.g., Why did the tiger give the lady a whisker?)

The use of these two different types of questions relates to causal directionality (Brown, 1975; Brown & French, 1976; Schmidt & Paris, 1977). Schmidt & Paris (1977) presented incomplete sequences of pictures and asked children to choose from among several alternatives a reasonable consequent or a reasonable antecedent. Kindergarten-level children chose significantly more correct consequent items than antecedent. Kun (1977) used a three-picture sequence and found no difference in frequency between a Why? (antecedent) versus What happened next? (consequent)

type question. The reason for her difference may have been because the response to the question was non-verbal (pointing to a picture), whereas the other studies relied on verbal answers. This study attempted to determine the difference between antecedent and consequent questions based on story text, as opposed to pictures.

Method

Subjects - Thirty-two children from five day care centers participated. Three centers were church sponsored, one proprietary and one University sponsored. Children's ages ranged from 66-80 months, M = 74.9, SD = 4.1.

Materials - Two stories from Stein and Glenn's (Note 2) research on story grammar were used, Tiger's Whisker[1] and Epaminandas. The story grammar parsing done by Stein and Glenn, was used as the basis of analysis. In addition, the Language Scale, Level II, Form A of the Metropolitan Readiness Test (MRT) (Nurss and McGovern, 1974), was given to each child. There were four questions on Tiger's Whisker, six on Epaminandas. Half of the questions for each story were of the form, given effect, asked for cause, half of the form, given cause asked for effect. Given cause questions had significantly more words per sentence, $t = 3.25$, $df = 19$, $p < .01$.

Procedure - A quiet, non-distracting small room within the daycare centers was used for the study. First each child was told "Listen to this story so that you can tell it back." Then each child was individually read one of the stories (randomly chosen), asked to wait for 30 seconds, then asked to recall the story. After recall, questions were asked. The same procedure was repeated for the second story. There were no

significant differences in overall recall based on order of presentation of stories ($F = 1.18$, $df = 1/24$, p = ns).

Story Data - Inter-rater reliability for assignment of recall data to story schema categories was 91%, with a randomly selected 6% of the stories rated twice. Inter-rater reliability for question data was 100%, with 6% of questions rated twice. The reliability formula used was:

$$\frac{\text{\# of hits}}{\text{\# hits} + \text{\# misses}}$$

A multiple regression/correlation technique was utilized to analyze the recall data. Because of the small sample size, a shrunken R^2 was computed for all F-tests on R^2 (Cohen & Cohen, 1975).

The results for the story grammar categories regressed on language ability yielded a significant R^2 of .41, ($F(7/24) = 2.8$, $p < .05$). There were only two story grammar categories with significant beta weights: Internal Plan (IP) beta = .36, t (24) = 2.13, $p < .05$, and Attempts (AT) beta = .37, t (24) = 2.15, $p < .05$.

A repeated measures ANOVA and Tukey follow-up tests were utilized to analyze the differences in percentages of recall per story grammar category. The ANOVA results comparing recall per category across all children was also significant, $F(7/29) = 3.52$, $p < .01$. Tukey follow-up tests indicated that Direct Consequences (DC) were more likely to be recalled than all others ($p < .01$). Setting, Internal Plan (IP) and Response were recalled significantly less ($p < .05$) than all four other categories (Reaction, Direct Consequence, Initiation Events and Attempts).

An X^2 test was carried out to determine whether the two with

significant beta weight categories, IP and AT, occurred more frequently in the beginning, middle or end of stories. The X^2 did not reach significance ($X^2 = 3.56$, df = 2, p = ns).

Question Data - There was a nearly significant difference in percentage of correct answers across question types, with given cause (GC) questions being recalled more ($F = 3.52$, df = 1/29 $p < .07$).

Discussion

The results indicate that recall of two specific story grammar categories (Internal Plan (IP) and Attempt (AT)) is associated with language ability. According to Mandler and Johnson (1977), story schemas are used to encode and retrieve information from stories. Therefore, if high language ability children encode and retrieve IP and AT information to a greater extent than low language ability, then these children have not developed adequate schemas for encoding the information contained in IP and AT categories.

These data parallel the results obtained by Stein and Glenn (Note 2) and Mandler and Johnson (1977) comparing respectively first and fifth and first and fourth graders. Stein and Glenn (Note 2) found that the Internal Response category, (which contained IP propositions) was the only category to discriminate across groups. Mandler and Johnson (1977) using a slightly modified story grammar, found that one of the major differences in recall by category between first and fourth graders was the Attempt category.

Spivak and Shure (1976) describe some cognitive deficits of implusive children which may be related to the schema deficits of the lower language ability children, due to the relationship between language ability and

impulsivity (Brannigan & Ash, 1977). The impulsive children's deficits are: conceptualizing consequences to social acts; lack of planning and foresight; and deficiency in monitoring their own actions. Each of these characteristics can be tied to the difficulty low language ability children have with the AT and IP story information. The Attempt deficit consists of goal-oriented action, parallel to the deficiency impulsive children have in monitoring their own behavior. There is also similarity between the Internal Plan deficit and the lack of planning ability characteristic. The Direct Consequence category, which is parallel to the dificit of conceptualizing consequences, was not found to be significant as a predictor of language ability in this study, though it has the next highest beta weight of all other story grammer categories. Therefore, it may be that difficulties impulsive and language disability children have in relating cognitively to their environment also influences the information they gain from stories.

Children's imagery ability may also be related to the recall of certain types of propostional information from stories. For instance, Guttman, Levin, and Pressley (1977) found that up to third grade, dynamic pictures depicting characters in action, rather than static pictures or imagery instructions increase narrative recall. It seems, therefore, that compared to older children, young children do not have the ability to visualize, without help, the dynamic activity in stories. Since Attempt (and Internal Plan as a foreshadow) contain the more dynamic information in the story, their lack of recall may be related to imagery ability differences between low and high language ability children, parallel to those between older and younger children.

There are other alternative explanations for these effects. The first is that Internal Plan and Attempt propositions are within the middle of the story, thereby depressing their recall, parallel to results found in serial learning tasks. However, the X^2 test indicates that IP and AT propositions were not concentrated significantly within the middle of the stories. A second explanation may be the redundance of the information in the two categories, a redundance of which only children with greater language ability were able to take advantage.

The question (causality) results reflect the general trend in the research that pre-operational children tend to reconstruct consequences (effects), given causes, rather than vice versa (Brown, 1975; Brown & French, 1976; Schmidt & Paris, Note 5). The above studies were done utilizing pictorial sequences as opposed to story material as in this study. However, Kun (1978) found contradictory data showing that given an event, preoperational children were able to pick the antecendent or consequent of that event with relative ease. The nature of this contradiction between her finding and the results presented here is that her task did not involve memory (the examplars were available visually to the children), and she did not require a verbal response (only pointing). The present study points out that pre-operational children are better able to retreive information from memory and state it verbally when cued by a cause than by an effect, indicating that reversibility is a schema that aides in information retrieval. Further support is given to a lack of causal bi-directionality in that the most frequently recalled category during re-construction overall is the Direct Consequence, demonstrating a greater salience of consequences in memory.

There are alternative explanations to the salience of Given Cause questions. One is the syntax differences between the two types of questions, since Given Cause questions have more words per question. Possibly then, Given Effect questions are not answered correctly because of their lack of complexity and detail, while Given Cause questions may be providing more linguistic and dramatic cues, aiding the child in recall.

Application The major implication is in the design of curriculum interventions to increase story comprehension. One remedial intervention could focus on Attempt schemas, helping low language ability children to conceptualize means which a character can use to reach a goal. Another would be a focus on the thoughts a character has about actions he/she may take. Developmentally, the focus would be on increasing the comprehension of Setting (including character description), and Internal Response and Plan, since these are the least recalled categories overall.

Questions designed to either assess level or story comprehension or increase story comprehension need to take into account the forms of question. Comprehension exercises using questioning would focus more on areas of weakness if Given Effect questions were utilized, and focus on areas of strength if Given Cause questions were utilized. Or, in planning instructional objectives for story comprehension, given cause, asked for effect questions would be the first objective, as it is the easiest, followed by given effect questions.

Reference Notes

1. Poulsen, D., Kintsch, E., Kintsch, W. & Premack D. Children's comprehension and memory for stories. Unpublished paper, University of Colorado at Boulder.

2. Stein, N. L. & Glenn, C. G. An analysis of story comprehension in elementary school children. St. Louis, MO: Washington University. Unpublished paper.

3. Stein, N. L. & Glenn, C. G. A developmental study of children's construction of stories. Paper presented at the Society for Research in Child Development, New Orleans, 1977.

4. Stein, N. L. & Glenn, C. G. The role of structural variation in children's recall of simple stories. Paper presented at the Society for Research in Child Development, New Orleans, 1977.

5. Schmidt, C. R. & Paris, S. G. Children's understanding of causal sequences. Paper presented at the biennial meeting of the Society for Research in Child Development, New Orleans, 1977.

References

Brannigan, G. G. & Ash, T. Cognitive tempo and WISC-R performance. Journal of Clinical Psychology, 1977, 35, 212.

Brown, A. L. & French, L. A. Construction and regeneration of logical sequences using causes or consequences as the point of departure. Child Development, 1976, 47, 930-940.

Cohen, J. & Cohen, P. Applied multiple regression/correlation analysis for the behavioral sciences. New York: John Wiley, 1975.

Guttman, J., Levin, J. R., & Pressley, M. Pictures, partial pictures and young children: oral prose learning. Journal of Educational Psychology, 1977, 69, 473-480.

Kintsch, W. & Van Dijk, T. A. Comment on se rappelle et on resume des histores. Languages, 1975, 40, 98-116.

Kun, A. Evidence for preschoolers understanding of causal direction in extended causal sequences. Child Development, 1978, 49, 218-222.

Mandler, J. M. & Johnson, N. S. Rembrance of things passed: Story structure and recall. Cognitive Psychology, 1977, 9, 111-151.

Nurss, J. R. & McGovern, M. E. Metropolitan readiness tests. New York: Harcourt, Brace & Jovanovich, 1974.

Rumelhart, D. E. Notes on a schema for stories. In D. G. Bobrow & G. A. Collins (Eds.) Representation and understanding. New York: Academic Press, 1972.

Spivak G. & Shure, M. B. Social adjustment of young children. San Francisco: Jossey-Bass, 1974.

Footnotes

[1]Only this story, Tiger's Whiskers had any proposition in the Internal Plan category. Epaminandas did not.